

Research Article (RA) Abstracts



The research world is facing “an information explosion” with several million research papers being published each year. There are also continual announcements of new journals being launched, either online or in hard copy or both. Many researchers, therefore, have to be highly selective in their reading, often focusing on skimming abstracts and key words. Research article (RA) abstracts have thus become an increasingly important part-genre.¹ In the “old days,” most papers did not have abstracts; surprisingly perhaps, abstracts were only introduced into medical research articles during the 1960s. And the now-fashionable so-called “structured” abstract (i.e., with named subsections) did not appear until about 1987.

¹ *Genre* is a name for a type of text or discourse designed to achieve a set of communicative purposes. Following this terminology, the research article is a genre, and various parts of it, such as the Abstract and Discussion, are part-genres.

For some top journals such as the *British Medical Journal (BMJ)* and the *Journal of the American Medical Association (JAMA)*, the acceptance rate for RA manuscripts is typically about 5 percent. Among journals such as these, manuscripts may be rejected after a reading of the abstract alone (Langdon-Neuner, 2008). While we need to stress that such rejections will be largely based on the perceived scientific merit of the paper (or lack thereof), it remains the case that a careful and coherent abstract can only help a manuscript reach the next step of external review.

According to Huckin (2001), RA abstracts have at least four distinguishable functions:

1. They function as stand-alone *mini-texts*, giving readers a short summary of a study's topic, methodology, and main findings
2. They function as *screening devices*, helping readers decide whether they wish to read the whole article or not
3. They function as *previews* for readers intending to read the whole article, giving them a road-map for their reading
4. They provide *indexing help* for professional abstract writers and editors

In addition, there are suggestions, at least in the medical literature (e.g., Bورداجه & McGaghie, 2001), that:

5. They provide *reviewers with an immediate oversight* of the paper they have been asked to review

Task One

Rank these five functions in terms of their importance to you and your field. Are there any that you think are irrelevant? Are there any other functions that you can think of? Does this task change your own approach to constructing abstracts in any way? (Sample answers for the tasks in the RA section can be found in the *Commentary* at www.press.umich.edu/esl/compsite/ETRW/.)

General Analysis of RA Abstracts

For this part of the book, you will need to put together a small reference collection (10–15 examples) of abstracts from a suitable journal or journals in your own field. We suggest that you take recent issues, and perhaps those in electronic format so that the texts can be copied and pasted for analysis. This collection of part-genres will be your reference corpus, a corpus being an accumulation of texts used for study and analysis.

We suggest that you do this mainly because a number of the following activities ask you to compare data or texts we present with those that are most relevant to you. For example, there are several questions of this type in the next task. So you need to put your reference collection together before you attempt Task Two.

Task Two

Read this traditional (unstructured) abstract from political science, and answer the questions that follow. Sentence numbers have been added for your convenience.

Abstract

① Many scholars claim that democracy improves the welfare of the poor. ② This article uses data on infant and child mortality^a to challenge this claim. ③ Cross-national studies tend to exclude from their samples non-democratic states that have performed well; this leads to the mistaken inference that non-democracies have worse records than democracies. ④ Once these and other flaws^b are corrected, democracy has little or no effect on infant and child mortality rates. ⑤ Democracies spend more money on education and health than non-democracies, but these benefits seem to accrue to middle- and upper-income groups.

Notes

^a the percentage death rate

^b errors

1. Underline what you consider to be the key clause (or part-sentence) in the abstract.
2. This opening abstract has five sentences and contains only 91 words. Thus, it is (deliberately) shorter than average.

Now consider this data:

Table 1: RA Abstracts from Various Fields, adapted from Orasan (2001)

Field	# of Sentences	Average # of Words
Computer Science	9.6	232
Chemistry	8.6	215
Artificial Intelligence	8.2	166
Biology	7.9	196
Anthropology	6.2	158
Linguistics	5.8	150
Overall Averages	7.4	175

Here are two questions based on Table 1:

- a. What patterns do you notice in this table?
 - b. Where would you guess your field might fit in the table? (If it is not one of these.)
3. What is the main tense used in this abstract? Why is this tense used? What is typical in your field? Check your reference collection.
 4. This abstract uses no citations or references to previous research. Is this typical in your experience?
 5. Does the abstract author use *I* or *we*? What is your experience here? Refer to your reference collection. Does your field commonly use expressions like *the present authors*?
 6. In the abstract, there is a single "self-referring" or "metadiscoursal" expression.² In this case it is *this article* in Sentence 2. Are metadiscoursal expressions used in abstracts in your field? If so, what are the common nouns?
 7. Are acronyms/abbreviations used in the example abstract? In your field, do they occur? And if so, of what kind?

² *Metadiscourse* is a common concept in studies of academic texts. It has various definitions. In this series, we use a narrow definition of "text about your text," as in *In the following section, we offer a computer simulation.*

8. Much recent work in discourse analysis has investigated the number of "rhetorical moves"³ (or communicative stages) in abstracts in various fields—and in various languages. Most researchers identify a *potential* total of five moves. Terminology varies somewhat, but these are in their typical order as follows:

Move #	Typical Labels	Implied questions
Move 1	Background/introduction/ situation	What do we know about the topic? Why is the topic important?
Move 2	Present research/purpose	What is this study about?
Move 3	Methods/materials/ subjects/procedures	How was it done?
Move 4	Results/findings	What was discovered?
Move 5	Discussion/conclusion/ implications/ recommendations	What do the findings mean?

In the abstract on page 3, how many of these five moves can you find? And what are they?

Earlier we said that abstracts have a potential maximum of these five moves. As we will see later, Moves 4 and 2 are most common, and Move 5 is the least common.

³ A *move* is a stretch of text that does a particular job. It is a functional, not a grammatical term. A move can vary in length from a phrase to a paragraph.

Task Three

Here are four more RA abstracts. Choose the one closest to your own area, and analyze it in terms of the eight questions from Task Two. We repeat these for you in summary form here.

1. Key clause?
2. In terms of Table 1, is your chosen abstract of expected length or not?
3. Most common verb tense?
4. Any citations?
5. Any first-person pronouns?
6. Any metadiscourse?
7. Any acronyms and abbreviations?
8. Move structure? (If you are unsure about this, look at the blocked text on page 9.)

1. *Psychology*

① This article presents and develops a theoretical model (The Adaptive Response Model; ARM) that proposes how employees adapt to the organization following changes in organizational policies that are perceived as dissatisfying. ② The ARM combines several streams of theoretical and empirical research in IO-Psychology. ③ It suggests that different type of employees (i.e., institutionalized stars, citizens, lone wolves, and apathetics) resort to different behaviors to adjust to dissatisfying events. ④ Institutionalized stars tend to exercise voice, lone wolves tend to exit, citizens tend to accept, and apathetics tend to resort to alternative forms of withdrawal (e.g., lateness, absenteeism, and theft). ⑤ Implications for the management of each employee type as well as suggestions for future research are discussed.⁴

⁴ For more explanation of terminology used in this abstract, see the Commentary on Task Three.

2. *Education*

① Prekindergarten programs are expanding rapidly but evidence on their effects is limited. ② Using rich data from Early Childhood Longitudinal Study, we estimate the effects of prekindergarten on children's school readiness. ③ We find that prekindergarten is associated with higher reading and mathematics skills at school entry, but also higher levels of behavior problems. ④ By the spring of first grade, estimated effects on academic skills have largely dissipated, but the behavioral effects persist. ⑤ Larger and longer lasting associations with academic gains are found for disadvantaged children. ⑥ Finally, we find some evidence that prekindergartens located in public schools do not have adverse effects on behavior problems.

3. *Mechanical Engineering and Food Service*

① The spontaneous formation of cracks in biscuits following baking, also known as checking, is an issue that manufacturers would like to be able to predict and avoid. ② Unfortunately the mechanisms driving this phenomenon are not well understood. ③ Speckle interferometry was used to study moisture-induced in-plane strain development in biscuits. ④ This sensitive and non-contacting technique for measuring surface displacements has two major advantages over more commonly used methods; firstly, strains can be detected at a far higher sensitivity (down to 2×10^{-6}) than previously accessible and secondly the method is a whole-field technique, enabling observation of the development of strain distributions during moisture migration. ⑤ For biscuits exposed to step changes in humidity, initial strain rates of up to 10^{-5} min^{-1} were measured, which decreased as the moisture content approached equilibrium, leading to an accumulated strain of $\sim 10^{-2}$ after 48 h. ⑥ Under these conditions, a homogeneous, uniform strain distribution was observed. ⑦ The data were used to calculate the hygroscopic expansion coefficient, which was linearly related to moisture content and provides the necessary constitutive link between strain and biscuit moisture content needed to model biscuit checking.

4. *Art History*

① By way of a case study devoted to Jean-Jacques Hauer (1751–1829), one of the minor figures making their Salon^a debut in the French Revolution, this essay explores the relations between art and historical events in times of radical transformation. ② A citizen-artist serving with the National Guard, the painter was a humble practitioner enjoying his greatest success at the height of collective militancy known as the *sans-culotte*^b movement. ③ The French Revolution allowed Hauer to go public, and most of his œuvre is closely tied to its tangled politics. ④ Representations from the death of Marat to the plight of the royal family are examined in the context of shifting discourses, sectionary politics and civic commitment.

Notes

^a the annual art exhibition in Paris

^b without the knee-length trousers worn by men from the upper classes (i.e., popular republican movement of the poorer classes)

Look over a subset of abstracts in your corpus, and answer the eight questions for your own field of study.

Now that we have obtained a general sense of the shape of abstracts, we can turn to how specific moves are realized in each move.

Specific Analyses

Getting Started (Moves 1 and 2)

We will explore this issue by taking the case of RA abstracts in one of the medical fields. The field we have chosen is Perinatology. Perinatology, also known as Maternal-Fetal medicine, deals with high-risk pregnancies and has a number of research journals. Some of these require structured abstracts, and some continue to use traditional ones. As a preview, here is a typical traditional abstract from this field. We have blocked it into moves for you. *Postpartum* means “after having given birth.”

Abstract

<p>① The object of this study was to evaluate postpartum women for psychiatric symptomatology including cognitive disturbances, anxiety, depression, and anger to better meet their needs for support and involve them in the care of their infants.</p>	Move 2
<p>② We interviewed 52 postpartum mothers at the Bronx Lebanon Hospital Center within 5 days of delivery and determined the presence of psychiatric symptoms using the 29-item Psychiatric Symptom Index.</p>	Move 3
<p>③ Despite the fact that adult mothers were happier when they were pregnant (71.4% versus 29.4%; $p = 0.010$) and less likely to be worried about their baby's health (25.7% versus 52.9%; $p = 0.003$), adult mothers demonstrated higher depressive symptomatology ($p = 0.009$), higher amounts of anger ($p = 0.004$), and greater overall psychiatric symptomatology ($p = 0.005$) than adolescent mothers. ④ Mothers whose infants were in the neonatal intensive care unit did not report significantly higher psychiatric symptomatology than mothers whose infants were healthy.</p>	Move 4
<p>⑤ Physicians need to be aware of the high levels of depression and anger present among postpartum women so appropriate support can be given.</p>	Move 5

1. In the Results move (Move 4), the significant findings in Sentence 3 are given before those that are not significant in Sentence 4.
2. The question of tense in purpose/objective/object statements in abstracts and introductions often arises. A general rule is that if a **genre-name** is used (e.g., the purpose of this *paper/article* . . .) the present tense is chosen, but if a noun is used that describes the **type of investigation** (*The purpose of this experiment / survey / analysis*), the past tense is preferred. With the rather vague term *study*—a very common choice in some fields—it would seem that the past tense is generally preferred, especially in the life and health sciences, but even there some exceptions can be found.
3. Note that in this and other medical fields, Move 5 quite often takes the form of a recommendation.

After this analysis of a single abstract, we now need to have a broader look at how abstracts get started.

Our research suggests that there are four basic types of opening sentences. We illustrate these with simple examples from economics.

**Type A: Starting with a Real-World Phenomenon
or with Standard Practice**

Corporate taxation rates vary around the world.

Economists have long been interested in the relationship between corporate taxation and corporate strategy.

Type B: Starting with Purpose or Objective

The aim of this study is to examine the effects of the recent change in corporate taxation.

Type C: Starting with Present Researcher Action

We analyze corporate taxation returns before and after the introduction of the new tax rules.

Type D: Starting with a Problem or an Uncertainty

The relationship between corporate taxation and corporate strategy remain unclear.

Task Four

1. Make up from your own area of research another example opening sentence for each of the four opening types.
2. Now look at the opening sentences in your own reference corpus of abstracts. How many fall in each type? Do you need any new types? Is there a type you did not find? Be prepared to comment on your findings.

(Of the first 20 abstracts in our Perinatology corpus, ten opened with Type A, eight with Type B, two with Type C, and none with Type D. This distribution did not surprise us.)

Language Focus: Links between Sentence 1 and Sentence 2

We have already suggested that the moves tend to follow a set sequence. For example, *purpose/objective* openings in perinatology are typically followed by sentences describing *researcher action*. So far, so good. However, we can also examine the relationship between the opening sentences in another way. We can see how the second sentence is grammatically linked—or not linked—to the first.

Research suggests that there are basically three options:

1. keep roughly the same subject (*continuing subject*)
2. put the information from the second half of the first sentence in the subject position at the beginning of the second (*capturing subject*)
3. use a new previously unmentioned topic as subject (*new subject*)

To see how this works out, let us reconsider the eight instances of *purpose* openings we found in Perinatology:

1. Continuing Subject

1. *The purpose of this study* was to analyze the influence of _____ on mortality
2. *This* was a multicenter, prospective, observational study.

We can see here that the authors have in Sentence 2 commented further on the methodological nature of their study, using *this* as the subject. Two of the eight examples used this way of connecting the two sentences.

2. Capturing Subject

1. The purpose of this study was to identify risk factors and to characterize *infants with respiratory distress syndrome (RDS)*.
2. A total of 67 newborns with RDS, born at gestational age (GA) > 35 weeks, were studied.

In this case, the authors have picked up the information toward the end of Sentence 1—typically new information—and repackaged it at the onset of Sentence 2. We have called this a *capturing* grammatical subject. Four of the eight examples used this type of link.

3. New Subject

1. The objective of this study was to define the variables associated with vaginal birth after cesarean section (VBAC) and to
2. We searched our computerized database for parturients with a history of VBAC. . . .

In this case, the *we* subject introduced a new grammatical entity into the text. There were two of these.

In general, new sentence subjects (i.e., “jumping” subjects) are in fact quite common in abstracts for a number of reasons:

- Abstracts have strict word limits.
- Abstracts are highly compressed texts.
- Authors expect readers to have considerable relevant content knowledge.
- Experienced readers’ expectations of how abstracts will develop are well established.

Additionally, we note that the increasing use of structured abstracts (see the next section) may increase this “jumping” effect.